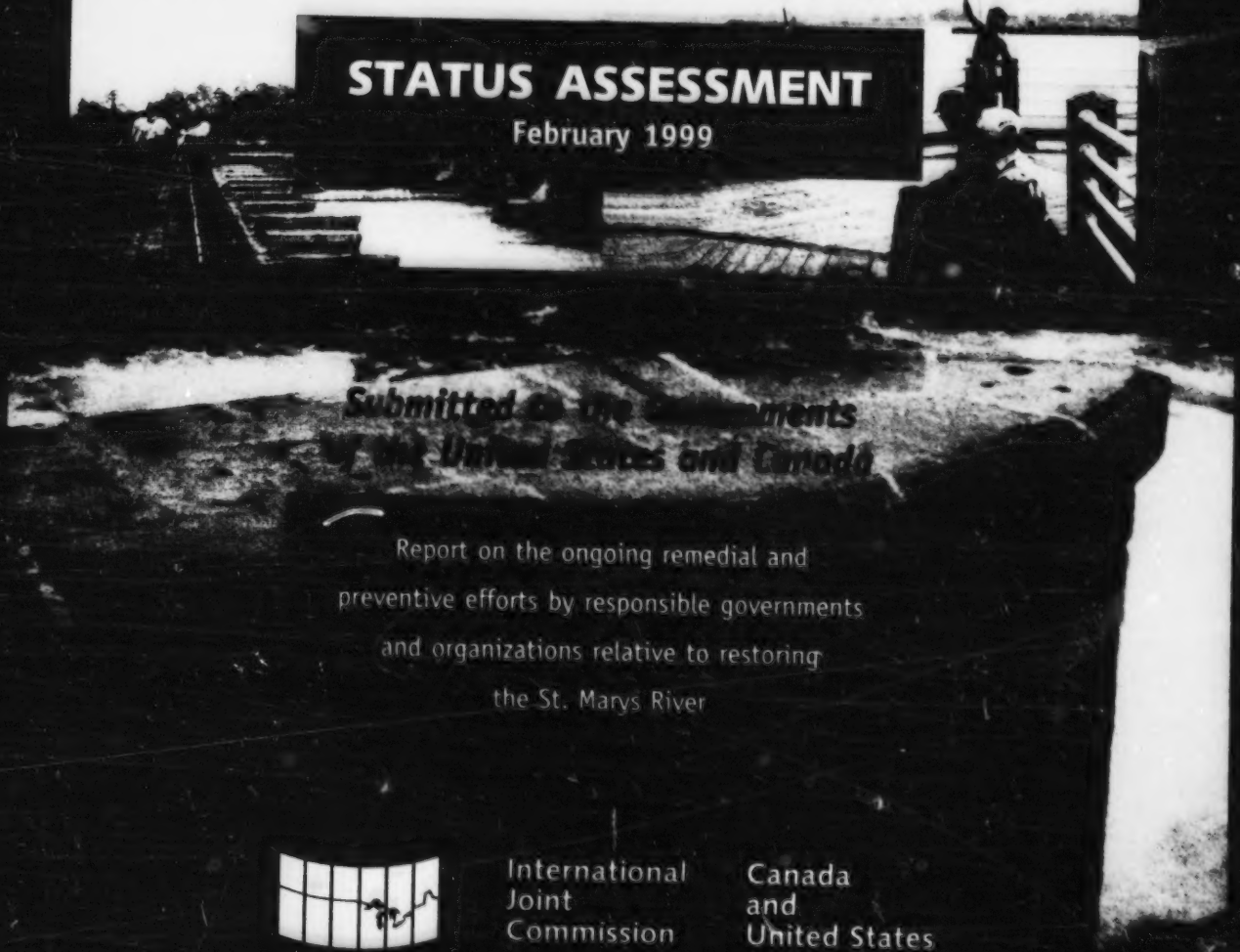
St. Marys River Area of Concern

INTERNATIONAL JOINT COMMISSION

STATUS ASSESSMENT

February 1999



Submitted to the Governments of the United States and Canada

Report on the ongoing remedial and preventive efforts by responsible governments and organizations relative to restoring the St. Marys River

International Joint Commission

Canada and United States

St. Marys River Area of Concern

The **International Joint Commission** was established by the 1909 Boundary Waters Treaty of the United States and Canada. The treaty recognizes that each country is affected by the other's actions in the lake and river systems along their common border. Its primary purpose is to prevent and resolve disputes concerning these shared waters. In 1972, the governments of the United States and Canada signed the **Great Lakes Water Quality Agreement**. In 1978, the governments signed a new Agreement which included additional commitments to rid the Great Lakes of persistent toxic substances. Its purpose is to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes basin ecosystem. IJC was given the responsibility to assess and evaluate the governments' programs and progress under the 1972 Agreement and assist in its implementation. In 1987, the governments signed a Protocol that included a commitment to report on progress and calling on IJC to review Remedial Action Plans being developed and implemented for the 42 identified Areas of Concern in the Great Lakes basin. The Commission has initiated a process for examining progress in specific Areas of Concern and open lake waters, called the Status Assessment process. The St. Marys River Area of Concern is the second such assessment.

ISBN 1-894280-03-2

Printed in Canada

Photos: Bruce Kirschner

Introduction

Remedial Action Plans and Areas of Concern

The goal of **Remedial Action Plans** (RAPs) is to restore and protect beneficial uses in 42 identified **Areas of Concern** (AOCs) within the Great Lakes basin. AOCs are geographic areas where human activities have caused or are likely to cause impairment of beneficial uses or the area's ability to support aquatic life. Table 1 presents, pursuant to Annex 2 of the Great Lakes Water Quality Agreement (Agreement), the 14 possible beneficial use impairments, their status as documented in the Stage 1 RAP for the St. Marys River AOC, the International Joint Commission's (IJC) Stage 1 review comments, and recommendations based on these comments. The United States and Canada (the Parties), in cooperation with state and provincial governments, agreed to develop and implement RAPs in a 1987 protocol to the Agreement. Each RAP is to embody a systematic and comprehensive ecosystem approach to restoring and protecting beneficial uses and serve as an important step toward virtual elimination of persistent toxic substances. Further, the Parties, in cooperation with state and provincial governments are to ensure that the public is consulted in all actions undertaken pursuant to Annex 2 of the Agreement.

The IJC is to review and comment on RAPs during three stages of development: when the definition of the problem has been completed; when remedial and regulatory measures are selected; and when monitoring indicates that impaired beneficial uses have been restored. In 1996, after more than ten years of reviewing and assisting in development of RAPs, and expressing concern with overall progress in development and implementation of cleanup and prevention strategies in some AOCs, IJC adopted a new initiative to examine progress toward restoration of beneficial uses by initiating status assessments in individual AOCs in an attempt to enhance the restoration process.

The St. Marys River AOC represents an ideal opportunity for the Parties to engage in a truly binational exercise in environmental restoration. Recommitment by the agencies to a partnership effort focused toward achieving implementation is required. The recent signing of the Four Agency Framework of Roles and Responsibilities for the Implementation of the Detroit River, St. Clair River and St. Marys River Shared Remedial Action Plans is symbolic of this needed recommitment. In particular, the leadership section of the Four Agency Framework details actions that are necessary in the St. Marys AOC.

The Status Assessment Process

Status assessments are intended to: examine progress toward restoration and protection of beneficial uses, assess program implementation relative to remedial and preventive actions; and identify and make recommendations on specific activities that could be taken to overcome obstacles and make measurable progress in restoring uses in the area. These status assessments are not comprehensive environmental audits, but assessments of ongoing efforts and activities of the responsible governments and organizations. Objectives of the status assessment process include collecting information on and transferring successful methods and experiences among different AOCs, and facilitating constructive interaction among various agencies and organizations that may have limited opportunity to exchange ideas.

For More Information

For more information regarding IJC, you may contact IJC public information services at:

Canadian Section
100 Metcalfe St.,
18th Floor
Ottawa, Ontario
K1P 5M1
(613) 995-2984

United States Section
1250 23rd St. N.W.,
Ste. 100
Washington, D.C.
20440
(202) 736-9000

Additional information regarding this status assessment can be obtained by contacting the Great Lakes Regional Office:

In Canada -
100 Ouellette Ave.,
8th Floor
Windsor, ON
N9A 6T3
(519) 257-6734

In the U.S. -
P.O. Box 32869
Detroit, MI 48232
(313) 226-2170

Information can also be obtained from the IJC web page at **www.ijc.org** or through e-mail to **commission@windsor.ijc.org**

Table 1.

A comparison of the Stage 1 RAP Conclusions, IJC's Stage 1 review comments and IJC recommendations based on the review comments in regard to the St. Marys Area of Concern use impairments

Use Impairment	Stage 1 RAP Conclusion	IJC Review Comments on Stage 1 RAP	IJC Recommendations Based on the Stage 1 Review Comments
Restrictions on fish and wildlife consumption	Fish consumption impaired due to mercury levels in a variety of species	Concur	None
Tainting of fish and wildlife flavor	Requires assessment	Concur	Address phenol contamination
Degraded fish and wildlife populations	Impaired	Concur	Analyze historical populations
Fish tumors or other deformities	Impaired	Concur	None
Bird or animal deformities or reproductive problems	Not impaired	Concur	None
Degradation of benthos	Impaired due to metals and organics	Concur	Well documented (as to degree of impairment)
Restrictions on dredging activities	Impaired	Concur	None
Eutrophication or undesirable algae	Impaired in embayments and slow moving parts of river	Concur	None
Restrictions on drinking water consumption or taste or odor problems	Not impaired	Concur, pending results of water use survey	Review risks to private users when water use survey is available
Beach closings	Impaired due to bacteria	Concur	Look at PAH contact (concern for swimmers)
Degradation of aesthetics	Impaired	Concur	Compile information on frequency of occurrence
Added costs to agriculture or industry	Not impaired	Concur	None
Degradation of phytoplankton and zooplankton populations	Not impaired in open water	Open water distinction is unnecessary	Reconsider impairment designation
Loss of fish and wildlife habitat	Impaired	Concur	Consider water column and sediment toxicity. Quantify habitat loss. Look at historic conditions.

103-00132/

The St. Marys River Area of Concern

Setting and Sources of Contamination

The binational St. Marys River Area of Concern extends from Whitefish Bay at a line drawn between Point Iroquois (Michigan) and Gros Cap (Ontario) to lines from Quebec Bay (Ontario) and Humbug Point (Ontario) on the St. Joseph Channel and respectively, Point Aux Frenes (Michigan) and Hay Point (Ontario) on the West Neebish Channel (OMOE and MDNR 1992). There are about 15,000 people living in the Sault Ste. Marie, Michigan and its vicinity and approximately 81,000 people living in the Sault Ste. Marie, Ontario and its vicinity.

The St. Marys River AOC has two major industrial dischargers. Algoma Steel Corporation and the St. Marys Paper Company are both located in Sault Ste. Marie, Ontario. These dischargers have represented major sources of contaminants to the St. Marys River. Emissions from Algoma Steel Corporation are also a source of the persistent toxic substances, benzene and polycyclic aromatic hydrocarbons (PAHs). There is no major industry on the U.S. side although the Cannelton Industries Superfund site is located on the grounds of a former tannery.

Sault Ste. Marie, Ontario operates two water pollution control plants (WPCP). Of these, the East End WPCP has primary treatment technology. Sault Ste. Marie, Michigan operates one wastewater treatment plant. There are sanitary sewer overflows and combined sewer overflows in the Ontario-side and Michigan-side, respectively. In addition, small treatment plants serve the communities of Richards Landing and Hilton Beach on the Ontario side of the St. Marys River. A third plant for the community of Echo Bay is under construction.

A recent report by the governments of Canada and Ontario (1998) states "Fish advisories for walleye, longnose sucker, and chinook are due to mercury and PAHs from discharges such as Algoma Steel, St. Marys Paper, and the East End WPCP." This statement conflicts with a comment from the governments of Canada and Ontario regarding the IJC's Status Assessment. The comment letter (Governments of Canada and Ontario, 1998) states "The sport fish advisories in the St. Marys River are primarily due to mercury contamination and we believe that local sources within the AOC are not responsible." At this time, it remains unclear which statement is accurate.

The Stage 1 RAP documented contaminated sediment problems on the Ontario side from the Algoma Slip to sites downstream including Bellevue Marine Park, Little Lake George and Lake George. On the U.S. side, contaminated sediment problems were noted at the Cannelton Industries Superfund site, Lake Nicolet and Munuscong Lake. Current information regarding the level of contamination is unavailable for Ontario sites except results from a 1995 survey of Bellevue Marine Park were made available in February 1998 in a report undertaken on behalf of the Ontario Ministry of Environment (OMOE) entitled "1995 Survey of St. Marys River Benthos in the Vicinity of Bellevue Marine Park" (Kilgour and Morton 1998). This report states "The study demonstrated that the St. Marys River in the vicinity of Bellevue Marine Park is still significantly contaminated with metals, oil and grease, total petroleum hydrocarbons, PAHs and nutrients." The report also noted "Contaminant concentrations have generally been reduced from 1987 . . ." No sampling was undertaken in 1995 regarding stations further downstream from the industrial sources. Accordingly, the current status of these downstream sites is not possible to discern. The Stage 1 RAP did note that "Complete recovery of the benthic communities occurs in the lower section of Lake George, 24 kilometers (15 miles) downstream from the industrial discharges."

The dischargers noted above contribute to concerns regarding impacts on aquatic life and human health. The existence of a local source for atmospheric loadings of persistent toxic substances is an additional concern due to these loadings' contribution to the human health concerns or the impairment of beneficial uses within the AOC. Boom and Marsalek (1987) studied the accumulation of PAHs in the snowpack of Sault Ste. Marie, Ontario over a 2.5 month period and determined about 90 kg/year (198 pounds/year) of PAHs would fall in the area annually. No recent estimates of PAH loading in Sault Ste. Marie, Ontario are available.

Human Health Considerations

Citizens have expressed concern regarding emissions from industry, consumption of environmentally contaminated fish, beach closures, and potential exposure to bacteria and other contaminants through the use of raw river water for drinking water. Possible human health effects due to local sources of air pollution are a transboundary concern within the AOC. PAHs and benzene in emissions are of particular interest to the IJC. A recent report by Canada and Ontario (1998) cited local dischargers as sources of mercury. The IJC's Stage 1 RAP review stated "Human health concerns in the AOC are numerous and go beyond the use impairments that have been identified for this RAP." Possible neurobehavioral effects from consuming environmentally contaminated fish have been documented in the Great Lakes Basin (Johnson *et al.* 1997, Lonky *et al.* 1996, Jacobson *et al.*1984).

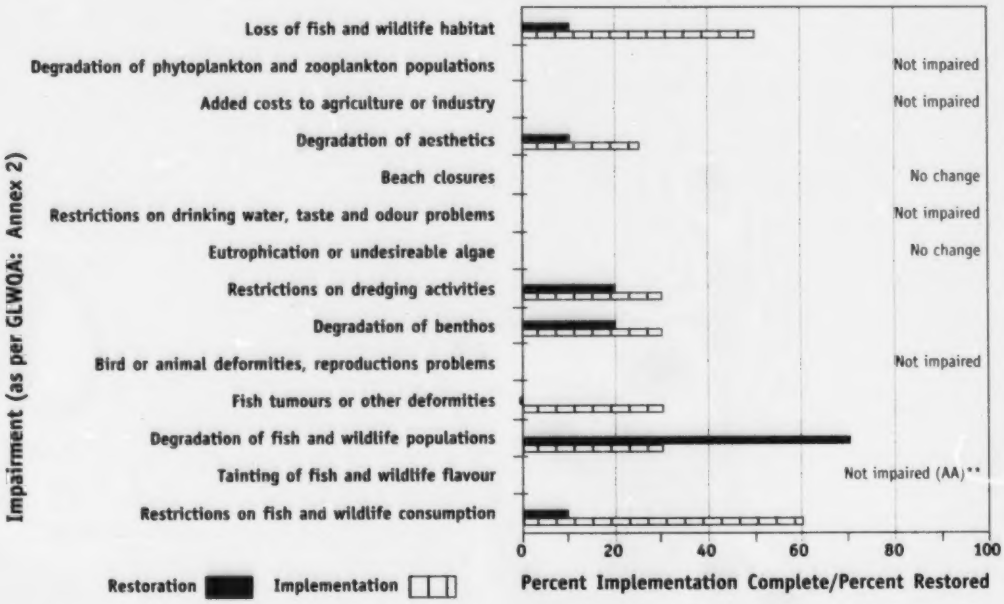
St. Marys River Assessment History

IJC's first examination of water quality conditions in the St. Marys River took place in 1912 in response to a request from the governments of the United States and Canada to examine the extent and causes of pollution in the Great Lakes. Water quality problems related to raw sewage were identified in the St. Marys River and other connecting channels in the basin. Although problems relating to raw sewage have been substantially corrected in most areas and water borne disease epidemics eliminated, other problems, such as the presence of persistent toxic substances, have been subsequently identified in the St. Marys River and in other areas of the Great Lakes basin. These problems became the subject of the 1978 Agreement and the 1987 Protocol.

A Stage 1 RAP (problem identification) for the binational St. Marys River Area of Concern was submitted for IJC review on May 11, 1992. Identified sources of pollution were: contaminated sediment; point source discharges from municipal and industrial sources including sanitary and combined sewer overflows; and non point sources of pollution from such sources as urban storm-water runoff including air deposition of toxic substances. Environmental issues of concern included: changes in fish community structure; loss of fish and wildlife habitat; impact on biota from impaired sediment quality; and adverse impacts of exotic species. IJC's review comments were submitted to the Parties on August 10, 1993. The current status of RAP implementation as defined by Environment Canada and the Ontario Ministry of Environment is presented in Table 2. Reservations regarding the accuracy of Table 2 in regard to the status of beneficial use impairments have been expressed by representatives of other implementing agencies and the BPAC.

Table 2. Environment Canada and Ontario Ministry of Environment
RAP Implementation Status

St. Marys River ~ Progress on RAP Implementation and Achievement of Delisting*



* RAP delisting targets are determined locally, and may or may not be equivalent to complete restoration of beneficial uses

** Not impaired(AA) = Redesignated based on additional assessment

Current Status Assessment

This current status assessment of the St. Marys River AOC was conducted between May 1997 and October 1998 and included consultation between IJC Commissioners and citizens, representatives of government agencies, local industries, municipalities, Native Americans/First Nations, and the Binational Public Advisory Council. In addition to this public consultation, IJC's Science Advisory Board conducted a public meeting concerning issues of scientific relevance to the development and implementation of the RAP.

An examination was conducted in the following areas: funding; institutional structure; roles of the Parties, jurisdictions and other sectors; and public consultation. This evaluation examines activities within the AOC that foster restoration of beneficial uses and is not confined to activities conducted as part of the RAP.

Findings:

The IJC's Status Assessment examined the successes and obstacles in the restoration process for the St. Marys River AOC. Examples of both are detailed below in order to document and promote successful activities and help overcome the obstacles.

Notable Successes:

Numerous advances toward restoration of the St. Marys River AOC were recognized during the Status Assessment. Notable successes are detailed below:

- **Algoma Steel Corporation has completed a filtration plant costing about $20 million dollars (Cnd.). The discharge of phenols has been reduced from about 250 kilograms (551 pounds) per day circa 1990 to about one kilogram (2.2 pounds) per day.**
- **In 1999, the U.S. Environmental Protection Agency will oversee action to remediate the Cannelton Industries Superfund site. This action will eliminate a significant source of chromium from U.S. waters.**
- **St. Marys Paper Company installed a secondary treatment facility in 1995 that reduced biological oxygen demand and suspended solids from the facility by 70%.**
- **In 1995, Sault Ste. Marie, Michigan, initiated a 25 year, five phase project to correct CSOs. This undertaking has been supported by State Revolving Loan Fund low-interest loans. In an extremely cost-effective manner, the City is matching water main improvements with CSO construction areas.**
- **Algoma Steel Corporation has completed the dredging, removal and confinement of 20,000 cubic metres (26,159 cubic yards) of PAH contaminated sediment from its boat slip.**
- **The U.S. Environmental Protection Agency in cooperation with Michigan Department of Environmental Quality and Lake Superior State University is providing resources necessary to enhance logistical support for the St. Marys River AOC Binational Public Advisory Council.**

- **Algoma Steel Corporation has undertaken a maintenance and repair program at a cost of up to $10 million (Cdn.) per year to reduce fugitive emissions from its three operating coke batteries.**

- **Habitat rehabilitation and enhancement projects (Ontario) have been implemented or are planned including restoration of walleye spawning areas; planned rapids habitat; planned protection and restoration of wetland areas; and planned implementation of watershed management plans in various sub-watersheds.**

- **Discussion is underway regarding a binational ambient air monitoring program to address concerns of U.S. citizens in regard to emissions from Algoma Steel Corporation.**

Participating in a site visit at Algoma Steel (from left): Peter Boyer, Great Lakes Science Advisory Board Secretary; and Science Advisory Board members Dr. Isobel Heathcote, University of Guelph; Dr. Donald Dewees, University of Toronto; Dr. Suzanne McMaster, U.S. EPA; Henry Lickers, Mohawk Council of Akwesasne; and Dr. William Bowerman, of Lake Superior State University, who is also a St. Mary River AOC BPAC member.

The IJC's Science Advisory Board U.S. Co-chair Michael Donahue opens a November 19, 1997 public meeting in Sault Ste. Marie, Michigan.

IJC's U.S. Chairman Tom Baldini examines the St. Marys River during the status assessment.

Donald Marles, St. Mary River AOC BPAC, addressing the Science Advisory Board and the public.

Obstacles to AOC Restoration and IJC Recommendations

Obstacles to a timely restoration of beneficial uses in the St. Marys River AOC were noted during the Status Assessment process. Presented below are key obstacles and IJC recommendations.

Ineffectual Coordination Between Agencies: Existing coordination mechanisms across the Canada/United States border have not resulted in a satisfactory degree of communication in this binational AOC. Frequent staff changes including at least seven changes in the Ontario RAP coordinator position have undoubtedly hindered coordination efforts. Recent activities related to preparation of the Stage 2 RAP have raised additional questions. Concerns have been voiced by agency and BPAC representatives in regard to content of the proposed outline for the Stage 2 RAP document. As outlined in the Four Agency Framework (Four Agency Framework) of Roles and Responsibilities for the Implementation of the Detroit River, St. Clair River and St. Marys River Shared Remedial Action Plans (Environment Canada *et al.* 1998), OMOE and Environment Canada have the primary responsibility for the administration of shared activities for the St. Marys RAP. Data gaps and concerns over certain environmental problems have lingered since preparation of the Stage 1 RAP document. In fact, neither the Michigan Department of Environmental Quality nor the BPAC supported the submission of the Stage 1 RAP to the IJC for review and comment.

The IJC understands that the St. Marys River BPAC outlined its concerns especially in regard to completion of a contaminated sediment management plan and the continued release of raw sewage and resultant impacts in a letter dated June 15, 1998. Concern regarding OMOE's activities in the AOC was expressed as long ago as 1992. The IJC is concerned that a commitment to an expedient completion of a Stage 2 document may, in reality, hinder the long-term process of restoring the beneficial uses in the St. Marys River AOC. The IJC believes that time and effort spent now to fully consider and respond to comments of other agencies will represent an investment toward future implementation of remedial actions. In an August 10, 1998 letter, Environment Canada and Ontario Ministry of Environment state "The Canadian agencies have since 1995 developed a good working relationship with Michigan Department of Environmental Quality and U.S. EPA." However, based on IJC observations, there was a serious question regarding the presence of effective coordination. For example, the IJC observed that in responding to the opportunity to comment on its Status Assessment, no obvious coordination between agencies in Canada and the United States occurred. Subsequent to receiving comments from the agencies, a representative of the IJC met with representatives from Environment Canada, Michigan Department of Environmental Quality, and Ontario Ministry of Environment to review their comments and current status of their relationship. Although there may be disagreement between the agencies on the past status of their interactions, it is clear that subsequent to the commencement of this assessment and signing of the Four Agency Framework in the spring of 1998, active staff-level interaction has been occurring between Michigan and Ontario regarding the development of the Stage 2 RAP and other AOC issues. The IJC strongly encourages the agencies to continue to build and sustain these relationships.

Recommendation: **Ontario Ministry of Environment and Environment Canada recognize their leadership role is an important factor in the restoration of the St. Marys AOC. Accordingly, they should ensure that their liaisons/contacts continue discussions with representatives of Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency to ensure that any unresolved issues in regard to completion of the Stage 1 document have been adequately addressed and suggestions regarding content of the Stage 2 document are fully considered. This action will demonstrate leadership and help build a foundation for implementation activities and a strong Stage 2 document.**

Inadequate Consultation with Citizens: Canadian agencies indicate that they have provided, on the average, $35,000 (Cdn.) annually since 1988 toward the purpose of public consultation. The outcome of these expenditures remains unclear. Numerous lead agency staffing changes and an apparent lack of oversight have contributed to problems regarding consultation with the public. As the IJC has previously noted, stable, locally-based agency support (IJC 1998) is the most preferred staffing option. Personnel involved in AOC restoration activities which forego this approach must be aware that extraordinary effort may be needed to achieve adequate consultation with the public. Numerous lead agency staffing changes have contributed to problems regarding consultation with citizens. According to members of the BPAC, there is not only a low level of public awareness regarding the AOC and goals for restoration, but there is a perception of abandonment of citizens' interests by the government agencies. This perception may be based on the limited contact by lead agency personnel over the past four years. Representatives of key industries have not participated in the BPAC for several years. It is unclear if lead agency personnel have taken any action to ensure acceptance and encouragement of participation by industry on the BPAC. The situation regarding public consultation appears to have improved during the Status Assessment process. It remains unclear if necessary resources are devoted to public consultation. Recently, the U.S. Environmental Protection Agency provided a $15,000 (U.S.) grant to assist the BPAC and it has made an additional $10,000 grant available to the BPAC through the Michigan Department of Environmental Quality.

Regardless of the level of support that has been provided, the IJC, during its Status Assessment, heard a litany of complaints regarding the lack of agency attention to environmental concerns of citizens. Annex 2 of the Agreement requires consultation with citizens in regard to all actions undertaken pursuant to the Annex. Informing citizens of actions taken cannot be regarded as consultation. Too little effort has been devoted to the important task of public consultation. Establishing or regaining the public trust in the AOC may prove to be a lengthy and time-consuming process.

Recommendation: **Give immediate priority to revitalizing public consultation activities in the AOC, beginning with a renewed commitment to and by the BPAC, with a view to generating and sustaining community understanding and support of the goals for AOC restoration.**

Need to Quantify Environmental Benefits of Remedial Actions: Several significant remedial actions have already been undertaken in the AOC and it appears that no reader-friendly tracking of success/progress that could be readily available to local residents has been developed and implemented. During the Status Assessment, it became apparent that government and industry successes and developments were not being transferred to interested citizens, agencies, elected officials, etc. The lack of information flow across the border was especially obvious. In particular, this shortcoming appears a detriment to the encouragement of responsible industry actions. If significant improvements to their operations that result in the enhancement of environmental conditions are not adequately recognized, can they be expected to eagerly undertake expensive improvements in the future? Tracking and reporting of these activities could be undertaken more cost-effectively if they are linked to ongoing public consultation efforts. Since government has a regulatory or oversight role, this function might best be accomplished by an independent local entity.

Recommendation: **Implementation activities within the AOC and their specific benefits should be clearly identified, tracked, and publicized with particular attention to the information needs of industry and citizens. This effort might well be linked with an ongoing initiative such as the Bi-national Regional Initiative Developing Greater Education.**

Monitoring of Environmental Conditions: Questions and concerns exist in regard to contaminated sediment conditions and emissions to the atmosphere by local industry. Bacteria levels due to sanitary sewer overflows in Sault Ste. Marie, Ontario, and resultant human health concerns in regard to the use of raw river water for drinking are ongoing issues. Due to limited available data, the current status of these concerns is difficult to ascertain. It is also unclear how previous staffing reductions in the Sault Ste. Marie office of OMOE will affect future monitoring efforts.

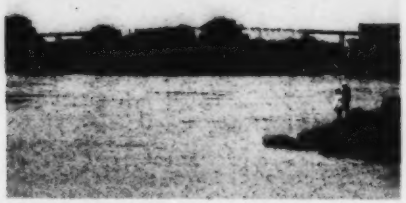
When the Stage 1 was completed, benthic community recovery was noted 24 kilometers (15 miles) downstream from the industrial discharges. Due to the lack of an ongoing sediment quality monitoring program, the present extent of benthic community impairment is unknown. The most recently completed sampling focussed only on the Bellevue Marine Park vicinity. Because of the lack of available information, the extent of recovery in regard to benthic community degradation could not be confirmed during the Status Assessment process. This deficiency, unless corrected, will also preclude tracking of future environmental improvements that may accrue due to planned remedial actions.

Recommendation: **A suitable monitoring program must be initiated. The program should include tracking of water and sediment quality at stations above, at, and below major dischargers. The downstream limit for stations should extend to the point of near-background conditions. Atmospheric inputs of persistent toxic substances to the waters and basin of the St. Marys River AOC should be tracked. This program should be fully coordinated with monitoring activities of the Lake Superior Lakewide Management Plan.**

Sewage Treatment Plant Upgrades: Planning and Funding: During its examination of infrastructure needs and improvement plans for Sault Ste. Marie, Ontario, and Sault Ste. Marie, Michigan, the IJC found planning to be uncertain in regard to upgrading the East End WPCP from primary treatment technology to secondary treatment technology. Discussion with OMOE regarding this situation yielded a statement that talks of funding an upgrade were premature until flows to the plant were controlled. The overflow of raw sewage is a concern of local citizens and the IJC. Plans for controlling excess flows and upgrading the East End plant should be fully explored through inter-agency discussions and the public could be informed of the costs and benefits of this undertaking.

Recommendation:

- **Necessary consultation should be undertaken so that any plans related to the correction of excess flows and upgrading of the East End WPCP can be completely explored, confirmed, and funded.**
- **Information in regard to costs and benefits of any planned upgrade should be widely disseminated. Since the limited available funds should be invested in remedial actions that will provide optimal environmental net benefit, this potential action should be compared to other needed actions.**



Involvement of Native Americans/First Nations: While undertaking this status assessment, IJC found no evidence of specific outreach programs directed at the most impacted subset of the AOC's population, the Native American/First Nation population. Representatives of Native Americans/First Nations expressed to the IJC their perception of abandonment by agencies. According to the BPAC, Aboriginal lands in Michigan and Ontario continue to be affected by the release of raw sewage during wet weather flow conditions.

Recommendation:

- **The four responsible agencies should utilize existing First Nation/Native American outreach programs at Lake Superior State University or other institutions to better communicate with communities on both sides of the U.S./Canadian border.**
- **Potential adverse effects to Aboriginal lands or water supplies should be examined and confirmed. Impacts should be used as further justification of controlling excess flows and upgrading the East End WPCP.**

Concluding Remarks

There are unresolved issues and opportunities for the restoration of beneficial uses in the AOC even though the geographic area and number of responsible parties are well defined. In addition to specific actions, fuller public and industry involvement and consultation are needed and achievable. The cooperation that appears to be developing between agencies should be extended by specifically designed programs in a binational context to engage citizens of the region and specific interests such as industry, fishing community and aboriginal peoples. As the IJC has witnessed in other AOCs, budget cutbacks, staffing reductions and changes, and changing priorities have seriously impacted the RAP process. The IJC notes these changes often occur without publicity or consultation. Despite these challenges, there are notable advances toward environmental restoration in the AOC. And yet, even these advances have gone without notice or publicity.

The St. Marys River AOC is an ideal opportunity for a truly binational exercise in environmental restoration. Recommitment by the agencies to a partnership effort focused toward achieving implementation is required. **The recent signing of the Four Agency Framework can provide impetus toward achieving this recommitment. In particular, the leadership section of the Four Agency Framework details actions that are needed in the St. Marys AOC. Promised necessary actions include:**

- **Demonstration of leadership through visibility;**
- **Empowerment of local leadership;**
- **Recognition of successes;**
- **Active pursuit of solutions to problems;**
- **Helping to define research needs and gaps; and**
- **Facilitation of the transfer of information and methodologies.**

References

Boom, A. and J. Marsalek. 1987. Accumulation of polycyclic aromatic hydrocarbons (PAHs) in an urban snowpack. National Water Research Institute, Environment Canada, Burlington, Ontario. Report #RRB-87-62.

Environment Canada, Michigan Department of Environmental Quality, Ontario Ministry of Environment, and U.S. Environmental Protection Agency. 1998. Four Agency Framework of Roles and Responsibilities for the Implementation of the Detroit River, St. Clair River and St. Marys River Shared Remedial Action Plans. Windsor, Ontario. 3pp.

Governments of Canada and Ontario. 1998. *Incremental Progress in Restoring Beneficial Uses at the Canadian Areas of Concern: Program Overview and Site Specific Analyses*. Toronto, Ontario. 65pp.

Governments of Canada and Ontario. 1998. August 10, 1998 Letter to Thomas Behlen, Director, Great Lakes Regional Office, IJC. 5pp.

International Joint Commission. 1998. Successful Strategies Toward Restoration in Areas of Concern. Windsor, Ontario. 25pp.

Jacobson, J.L., S.W. Jacobson, G.G. Fein, P.M. Schwartz, and J.K. Dowler. 1984. Prenatal exposure to an environmental toxin: A test of the multiple effects model. Developmental Psychology. 20:523-532.

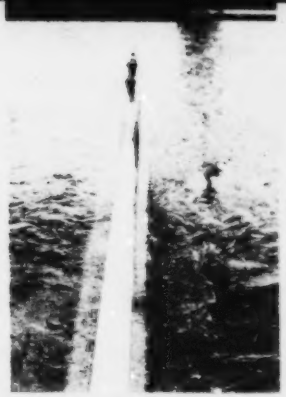
Johnson, B.L., H.E. Hicks, D.E. Jones, W. Cibulas, C.T. DeRosa. 1997. U.S. Department of Health and Human Services, Public Health Implications of Persistent Toxic Substances in the Great Lakes and St. Lawrence Basins. Public Health Service, Agency for Toxic Substances and Disease Registry, Atlanta, Georgia.

Kilgour, B. and W. Morton. 1998. Final Report on 1995 Survey of St. Marys River Benthos in the Vicinity of Bellevue Marine Park. Guelph, Ontario. 113pp.

Lonky, E., J. Reihman, T. Darvill, J. Mather, Sr. and H. Daly. 1996. Neonatal behavioral assessment scale performance in humans influenced by maternal consumption of environmentally contaminated Lake Ontario fish. Journal of Great Lakes Research. 22:198-212.

Ontario Ministry of Environment and Michigan Department of Natural Resources. 1992. The St. Marys River Area of Concern Stage 1 Remedial Action Plan. Sarnia, Ontario.

Schedule of Consultations



May 20, 1997	Binational Public Advisory Council and IJC staff member
September 2, 1997	Binational Public Advisory Council and U.S. Chair of IJC
October 28, 1997	Binational Public Advisory Council and IJC staff member
November 19, 1997	St. Marys Paper Company, U.S. Chair of IJC, IJC-Science Advisory Board and IJC staff members
	Algoma Steel Corporation, U.S. Chair of IJC, IJC-Science Advisory Board and IJC staff members
	Public meeting, BPAC, U.S. Chair of IJC, Science Advisory Board and IJC staff members
November 20, 1997	Native American/First Nations representatives, U.S. Chair of IJC and IJC staff member
	Representatives of Sault Ste. Marie, Ontario, U.S. Chair of IJC, and IJC staff member
	Representative of Sault Ste. Marie, Michigan, U.S. Chair of IJC, and IJC staff member
February 19, 1998	Representatives of Michigan Department of Environmental Quality and IJC's Great Lake Regional Office (phone consultation)
February 26, 1998	Representatives of U.S. Environmental Protection Agency, Region V and Great Lakes National Program Office, IJC Commissioners, and IJC staff members
April 30, 1998	Representatives of : Environment Canada, Ontario Ministry of Environment, Ontario Ministry of Natural Resources, IJC Commissioner and IJC staff members
October 29, 1998	Representatives of Environment Canada, Michigan Department of Environmental Quality, Ontario Ministry of Environment and the Director of the IJC's Great Lakes Regional Office

St. Marys River Area of Concern